



## **Your Guide to the Pros & Cons of Different Metal Roofing Materials**

To its core, metal roofing is a superior roofing material. Metal panels are an all-around solid roofing choice from durability to longevity to aesthetic appeal. In Montana, choosing metal roofing for your project is an especially wise decision given our intense climate conditions. They can stand up against the intense heat of our scorching summers and shed the heavy snow loads of our frigid winters, making them ideal for every season.

If you've decided to install metal panels on your next roofing project, you've taken a step in the right direction. However, there are many different types of metal roofing materials available. Plus, each comes with its own unique benefits and, at times, challenges. So, how do you choose the right one for your needs?

From the rustic charm of Corten steel to the brilliance of copper, we're diving deep into the pros and cons of different metal roofing materials like steel (including its popular variations), zinc, copper, and aluminum. Our aim? To give you all the information you need to make a choice that's not only smart but feels right for your metal roofing project. Let's explore together what each of these metal roofing options has to offer.

### **Factors to Consider When Choosing Metal Roofing**

When choosing metal roofing, it's important to think about a few key things to make sure you pick the best option for your needs:

- **Climate Suitability:** Choosing the right metal based on your local weather can help ensure your roof lasts a long time. Galvanized steel is great for places with lots of weather changes but no harsh salt exposure. Metals

like Galvalume steel are perfect for rainy or snowy areas because they resist rust well.

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- **Aesthetic Compatibility:** It's important to pick a metal that not only matches the building style but also fits well with the surrounding area to improve the overall appearance. For example, copper roofs add a classic look that can be beautiful on older or traditional buildings. For a modern building, metals like stainless steel or painted aluminum offer a sharp, clean look.

**Cost vs. Longevity:** Think about the cost compared to how long the roof will last and what it will need for upkeep. Copper and zinc have the highest upfront cost but don't need much maintenance and last a long time. On the other hand, galvanized steel might cost less now but could need more upkeep in the long run to keep it pristine. Considering these costs and how long you plan to keep the property can help you save money in the long run.

## Types of Metal Roofing Materials

### 1. Steel Roofing

For good reason, steel is one of the most commonly used materials for metal roofing. Its strength, durability, and affordability set it apart from other roofing materials, **lasting anywhere from 40 to 70 years depending on the type and treatment of the steel**. Bonus, steel roofing provides robust protection against various weather conditions, making it excellent for Montana climates.

Steel roofing can also refer to several subcategories of steel materials. The most popular ones we see at **Great Northern Metal Company** are Galvanized steel, Galvalume steel, Corton steel, and Bonderized steel. Let's take a look at each of these unique materials that fall under the umbrella of steel roofing and their pros and cons.

### Galvanized Steel

Galvanized steel metal roofing is a popular choice due to its durability and affordability. It is made by coating regular steel with a layer of zinc, which protects it from rust and increases its longevity. This type of roofing is especially valued for its strength and resistance to environmental elements, making it a practical option for many buildings. The zinc coating also gives it a shiny appearance when new, which weathers into a more

matte finish over time. Galvanized steel is a cost-effective solution that offers reliable protection against corrosion, making it suitable for a wide range of climates, notably Montana's.

### Pros

- **Cost-Effectiveness:** Galvanized steel panels are incredibly reasonable for the price point. This makes galvanized steel a good choice for larger buildings or when trying to keep construction costs down.
- **Fire Resistance:** Galvanized steel is naturally **fire-resistant**, making it a solid choice for regions prone to wildfires, like Montana.
- **Suitable for Agricultural or Animal-Related Applications:** Galvanized metal roofing panels are ideal for agricultural or animal-related settings. Due to their zinc coating, galvanized panels are protected against corrosion from animal waste and ammonia.

### Cons

- **Potential for Corrosion:** Despite its initial resistance, galvanized steel can eventually corrode. This is particularly noticeable at the edges of panels or in areas where the zinc coating has been compromised. Over time, if the galvanized coating wears off, the exposed steel will start to rust.
- **Aesthetic Limitations:** While galvanized steel has a distinctive shiny appearance when new, this can dull over time. The panels can also show signs of wear, such as streaking or spotting over the years.

## Galvalume Steel

Galvalume is the most widely used steel option used in modern metal roofing, renowned for its versatility and wide range of architectural applications. First introduced in the early 1970s, Galvalume is a steel panel coated with aluminum, zinc, and silicon. This powerful combination of metals enhances the panel's overall ability to withstand rust and corrosion, making it incredibly durable.

### Pros

- **Reasonably Priced:** Galvalume is one of the most affordable metal materials available. Although the price can fluctuate depending on the

panel thickness, color, and quality you choose, overall, Galvalume pricing is very reasonable.

- **Longevity:** Thanks to its corrosion-resistant properties, Galvalume steel roofing has a long lifespan, often lasting 40-60 years or more, with proper maintenance.
- **Self-Healing Properties:** Galvalume steel has “self-healing” properties, where its aluminum and zinc coating reacts with moisture to form a protective barrier at cut edges and scratches, preventing deeper corrosion.
- **Warranty Availability:** Galvalume steel often comes with manufacturer warranties that cover substrate issues like perforation and defects, reflecting confidence in its durability and providing long-term peace of mind for buyers. Paint warranties may also be available for some Galvalume systems, so check with your local metal roofing expert for more information.
- **Flexible Aesthetic:** While Galvalume steel typically has a distinctive silvery appearance, it can also be painted to match a wide range of aesthetic preferences. Galvalume is well known for being an excellent substrate for primer and paint to hold onto, so you have more color, paint, and coating options to choose from with Galvalume. This versatility makes it suitable for various architectural styles, from modern to traditional.

## Cons

- **Not Suitable for Agricultural or Animal-Related Applications:** Although Galvalume steel is highly resistant to corrosion, it can suffer in environments—like ranches and farms— where the pH levels are highly alkaline or acidic. For example, areas with excessive use of fertilizers or animal urea can accelerate corrosion, as these conditions compromise the protective coating.
- **Incompatibility with Other Metals:** Galvalume steel panels can be susceptible to galvanic corrosion if they come into contact with certain other metals, such as copper or iron in the presence of moisture. This requires careful consideration during installation to ensure that different metals do not come into direct contact.

## **Corten Steel (Weathering Steel)**

Originally developed for building railroad coal cars, Corten—or weathering steel—is designed to form a stable, rust-like appearance after several years of exposure to weather. The protective layer of rust that Corten steel develops helps to reduce the corrosion rate. It is popular in architectural applications for its distinctive reddish-brown appearance, and it's making a comeback in the recent housing market for roofing applications.

### **Pros**

- **Unique Aesthetic:** Corten steel is valued for its striking, rustic appearance, which becomes even more pronounced over time. The steel develops a rich, protective patina that ranges from orange to brown depending on environmental conditions. This patina is not only visually appealing but also serves as a protective barrier, enhancing the material's resistance.
- **Durability and Low Maintenance:** Once the patina has developed fully, Corten steel requires little maintenance compared to other roofing materials. The patina layer protects the material underneath from moisture and oxygen, which slows down the corrosion process.

### **Cons**

- **Initial Rust Runoff:** Corten steel can experience rust runoff during the initial weathering period. This weathering can stain the surfaces it drips onto, such as sidewalks, walls, and other parts of the building. This can be problematic in areas where this runoff could cause staining or damage.
- **Structural Consideration:** Due to its inherent characteristics and weight, special consideration must be given to the structural support of buildings when using Corten steel. It's important to ensure that the structure can support the weight of a Corten roof, especially in areas with heavy snowfall, like Montana.

## **Bonderized Steel**

Bonderized steel, also known as “paint grip steel,” is galvanized steel that has undergone a phosphate bath treatment to create a matte finish that enhances paint adhesion. This treatment gives the steel a rough texture, making it ideal for painting. Although bonderized steel has a dull gray appearance and must be painted shortly after installation to prevent corrosion, it has excellent paint-holding properties. This makes it a

preferred choice for applications requiring a durable painted finish. Care must be taken during handling to preserve the phosphate coating's integrity, ensuring optimal paint adhesion.

### Pros

- **Corrosion Resistance:** Like galvanized steel, bonderized steel is resistant to corrosion thanks to its zinc coating. The additional phosphate coating adds an extra layer of protection against rust and corrosion, especially once it is properly painted.
- **Excellent Paint Adhesion:** The chemical treatment bonderized steel undergoes creates a rough surface that allows paint to adhere better than it does on traditional galvanized steel. This makes it ideal for projects where a specific color or finish is desired, reducing the likelihood of paint peeling or blistering over time.

### Cons

- **Must Be Painted:** The bonderized coating itself is not sufficient to prevent rust if left exposed, so bonderized panels must be painted. This requirement adds an extra step in the installation process and potential long-term maintenance to ensure the integrity of the roof.
- **Natural Oils can Damage Panels During Installation:** Bonderized steel can be sensitive to handling and installation. The chemically treated surface can easily be damaged or contaminated by oils from hands, which can affect paint adhesion. Careful handling is necessary to maintain the integrity of the surface before painting.
- **Aesthetic Limitations:** Bonderized steel does not offer any inherent aesthetic qualities before painting. Unlike some metal roofing materials that can be left unpainted or have an appealing natural finish, bonderized steel panels are utilitarian in appearance until painted.

## 2. Zinc Roofing

Zinc metal roofing stands out among the metal choices, a premium material known for its strength and long lifespan. Made entirely from zinc, this roofing material is highly resistant to corrosion, lending to its longevity. In fact, a zinc roof can last between 60 to 100 years with very little upkeep. One of the unique qualities about zinc roofing is that it has self-healing properties, which means it can fix minor scratches by itself.

Plus, zinc is 100% recyclable, making it a sustainable choice for those who want to cut their environmental impact.

Another standout feature of zinc roofing is its ability in certain climates to develop a patina over time. This natural, protective layer not only enhances its durability but its aesthetic appeal. However, due to Montana's low-humidity climate, zinc panels often do not develop their characteristic protective patina.

## Pros

- **Longevity:** Zinc panels are known for their exceptional durability, outlasting copper, steel, and aluminum panels. Zinc's ability to resist weathering, corrosion, and UV light makes it a long-term roofing solution, reducing the need for frequent replacements and repairs.
- **Minimal Maintenance:** Zinc requires minimal upkeep because it develops a protective patina that shields the metal from moisture and chemicals. This patina not only enhances the roof's durability but also heals scratches over time, maintaining the roof's appearance without the need for additional treatments or paints.
- **Aesthetic Flexibility:** Zinc is highly malleable, which allows it to be formed into various shapes and designs, making it suitable for custom or complex roof architectures. Plus, its initial bright, shiny appearance transitions to an attractive patina, offering an evolving aesthetic that can complement a range of architectural styles.

## Cons

- **High Initial Cost:** A major downside of zinc roofing is its price. Zinc is the priciest roofing option we know of, which might not fit into every budget. The upfront cost is generally higher than that of materials like steel. So, if you appreciate the appearance of zinc roofing but find the cost too steep, you might consider opting for a low-gloss painted steel panel, which mimics the patina of a zinc roof.
- **Difficult to Work with in Cold Weather:** Zinc roofing can be difficult to work with in cold weather, becoming brittle and prone to fracturing at temperatures below 43 degrees Fahrenheit. It's recommended to install zinc panels in temperatures above 50 degrees to ensure proper handling and installation.



- **Lack of Patina in Montana:** As previously noted, a significant downside of using zinc panels in Montana is that they are less likely to develop the patina that is often sought for its visual appeal. This patina usually forms in more humid environments, and without it, zinc roofs in Montana may maintain their original shiny appearance for a longer period. This could potentially fail to meet the aesthetic preferences of some building owners.
- **Natural Oils can Damage Panels During Installation:** When installing zinc roofing, it's crucial for installers to handle the panels carefully because the oils from their hands can leave marks and smudges on the zinc. These oils can react with the zinc, leading to discoloration and spots that might disrupt the even look of the roof's surface over time.

### 3. Copper Roofing

Copper metal roofing is another premium roofing material famous for its natural beauty, durability, and longevity. Made from pure copper, this type of roofing typically oxidizes over time. Copper roofing transforms from its original shiny, reddish-gold hue to a distinctive green patina. However, because of Montana's low-humidity climate, copper panels often lack the green patina.

Copper roofs are highly durable, often having a lifetime lifespan. This makes them a favored option for luxury residences and structures looking to make a statement. Copper's natural ability to repel algae and moss also helps in maintaining a building's structural integrity. Plus, copper has an impressive thermal conductivity, lending to its energy efficiency.

#### Pros

- **Aesthetic Appeal:** Copper roofs are prized for their beauty and the distinct character they add to buildings. Depending on environmental conditions, they start with a bright metallic sheen and can gradually develop a rich patina that can range from green to bronze.
- **Longevity:** Copper is extremely durable and can last nearly a century if properly installed and maintained. Its longevity surpasses most other roofing materials, making it a one-time investment for many homeowners.
- **Environmentally Friendly:** Copper is a sustainable choice as it is 100% recyclable. Many copper roofs are made from recycled materials. So once the roof's life is over, the copper can be recycled again without loss of quality.



## Cons

- **High Initial Cost:** One of the most significant drawbacks of copper roofing is its cost. Copper is one of the most expensive roofing materials available, which can be prohibitive for some budgets. The initial investment is much higher compared to materials like steel or aluminum. So, if you like the look of copper roofing but don't like the price tag, you may be better off investing in a copper-painted steel panel instead.
- **Lack of Patina in Montana:** As we mentioned earlier, a notable con of using copper roofing is it is less likely to develop the characteristic green patina that is often desired for its aesthetic appeal. The development of this patina is facilitated by more humid environments, and without it, copper roofs in Montana may retain their original bronze color longer. This means it may not meet the aesthetic expectations of some homeowners.
- **Natural Oils can Damage Panels During Installation:** During the installation of copper roofing, installers must be very cautious because the natural oils from their hands can leave fingerprints and smudges on the copper panels. These oils can react with the copper, causing discoloration and spots that may affect the uniform appearance of the roof's surface as it oxidizes.
- **Thermal Expansion and Contraction:** Copper expands and contracts significantly with temperature changes. This requires special installation techniques to allow for movement and avoid structural damage or buckling.

## 4. Aluminum Roofing

Aluminum metal roofing is a lightweight roofing material made primarily from, you guessed it, aluminum. While not as sturdy or strong as steel, aluminum roofing is known for its resistance to corrosion. This makes it a particularly good choice for marine environments, where salt spray and high humidity can cause deterioration of other roofing materials like steel. However, in Montana, aluminum roofing is much less common. Why? Because its benefits are not as needed in our climate. Montana does not have the same corrosive coastal environmental factors that make aluminum a necessity. Instead, our state's intense and variable weather patterns demand more durable roofing materials that can withstand whatever Mother Nature throws our way. Since we often face bouts of

heavy snowfall and hail, aluminum is a less-than-ideal choice for our region. For Montana, we highly recommend other metal options, such as steel or Galvalume, to get the most bang for your buck.

### Pros

- **Lightweight:** Aluminum roofing is notably lightweight, which makes it easier to handle during installation and reduces the load on the building's structure. This can be helpful for older buildings or those with structural limitations.
- **Suitable for Coastal Situations:** Aluminum is highly resistant to salt corrosion, making it an excellent choice for coastal areas. Its ability to withstand the corrosive effects of salt spray helps maintain its integrity and appearance over time in marine environments.

### Cons

- **More Expensive than Steel:** Aluminum roofing tends to be more costly than steel roofing options. The higher price is due to aluminum's overall material cost and the processing involved, which can affect the budget of roofing projects.
- **Not Suitable for Montana's Climate:** In Montana's climate, where conditions include heavy snowfall and hail, aluminum's lightweight and less sturdy nature compared to steel makes it less ideal. Aluminum may not hold up as well under the mechanical stresses of snow loads and hail.
- **Prone to Denting:** Aluminum, while resistant to corrosion, is softer than many other metal roofing materials and is more prone to denting. This susceptibility can be a concern in areas with severe weather conditions like hail or falling debris.

## **Need a Hand? We're Here to Help!**

Choosing the right metal roofing can be a weighty decision, that affects the longevity and performance of a roof for decades to come. That's why it's crucial to partner with experienced professionals who can guide you through the selection process.

At , our experts have decades of combined experience in metal roofing in Bozeman and the far reaches of Montana. Our team members can guide you through the nuances of each type of metal so you can make an informed decision. By understanding the specs of your project, we can help align your goals with your practical requirements and stylistic preferences. Ready to discuss your project? **Reach out to us for a consultation or quote today!**